

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A heat exchanger assembly for cooling three cooling fluids, the heat exchanger comprising:
 - a vehicle air conditioning unit;
 - a vehicle fuel cell;
 - a vehicle drive motor;
 - a first heat exchanger comprising a first heat radiating area arranged to receive a flow of a first cooling fluid flowing through the vehicle air conditioning unit and to radiate heat therefrom; and
 - a second heat exchanger comprising a second heat radiating area arranged to receive a flow of a second cooling fluid flowing through the vehicle fuel cell and to radiate heat therefrom, and a third heat radiating area arranged to receive a flow of a third cooling fluid flowing through the vehicle drive motor and to radiate heat therefrom,
 - the second and third cooling fluids being disposed parallel to the respective second and third heat radiating areas, and the second and third heat radiating areas being disposed rearward of the first heat radiating area,
 - a difference in temperature between the first cooling fluid entering the first heat radiating area and exiting the first heat radiating area is greater than a difference in temperature between the second cooling fluid entering the second heat radiating area and exiting the second heat radiating area and greater than a difference in temperature between the third cooling fluid entering the third heat radiating area and exiting the third heat radiating area, and a temperature of the second cooling fluid flowing through the second heat radiating area is higher than a temperature of the third cooling fluid flowing through the third heat radiating area, and
 - the second heat raditing radiating area being disposed on an upstream side of a flow direction of the first cooling fluid in the first heat radiating area, and the third heat radiating area being located on a downstream side of the flow direction of the first cooling fluid in the first heat radiating area.

2. (Currently Amended) A heat exchanger assembly for cooling three cooling fluids, the heat exchanger comprising:

a vehicle air conditioning unit;

a vehicle fuel cell;

a vehicle drive motor;

a first heat exchanger comprising a first heat radiating area arranged to receive a flow of a first cooling fluid flowing through the vehicle air conditioning unit and to radiate heat therefrom; and

a second heat exchanger comprising a second heat radiating area arranged to receive a flow of a second cooling fluid flowing through the vehicle fuel cell and to radiate heat therefrom, and a third heat radiating area arranged to receive a flow of a third cooling fluid flowing through the vehicle drive motor and to radiate heat therefrom,

the second and third cooling fluids being disposed parallel to the respective second and third heat radiating areas, and the second and third heat radiating areas being disposed rearward of the first heat radiating area,

a temperature of the first cooling fluid flowing through the first heat radiating area being higher than a temperature of the second cooling fluid flowing through the second heat radiating area, and the temperature of the second cooling fluid flowing through the second heat radiating area being higher than a temperature of the third cooling fluid flowing through the third heat radiating area, and

the second heat radiating area being disposed on a upstream side of a flow direction of the first cooling fluid in the first heat radiating area, and the third heat radiating area being located on a downstream side of the flow direction of the first cooling fluid in the first heat radiating area.

3. (Currently Amended) The heat exchanger assembly according to claim 1, wherein

an area of the first heat radiating area disposed on a first face of the first heat exchanger is substantially the same as combined areas of the second and third heat radiating

areas disposed on a first face of the second heat exchanger, the first faces being arranged to receive an airflow.

4. (Currently Amended) The heat exchanger assembly according to claim 1, wherein

the first heat exchanger is disposed substantially parallel to the second heat exchanger.

5. (Currently Amended) The heat exchanger assembly according to claim 1, wherein

the second and third heat radiating areas are disposed adjacent one another.

6. (Withdrawn-Currently Amended) The heat exchanger assembly according to claim 1, wherein

the second heat radiating area is disposed between a first third heat radiating area portion and a second third heat radiating area portion.

7. (Cancelled)

8. (Currently Amended) The heat exchanger assembly according to claim 1, wherein

the first cooling fluid flows from the air conditioning unit to the first heat radiating area via a first cooling fluid inlet passageway, and from the first heat radiating area to the air conditioning unit via a first cooling fluid outlet passageway, and

the first heat exchanger further comprises a first cooling fluid inlet for receiving the first cooling fluid from the first cooling fluid inlet passageway, and a first cooling fluid outlet for permitting a flow of the first cooling fluid out of the first heat exchanger and into the first cooling fluid outlet passageway.

9. (Currently Amended) The heat exchanger assembly according to claim 8, wherein

the second cooling fluid flows from the fuel cell to the second heat radiating area via a second cooling fluid inlet passageway, and from the second heat radiating area to the fuel cell via a second cooling fluid outlet passageway, and

the second heat exchanger further comprises a second cooling fluid inlet for receiving the second cooling fluid from the second cooling fluid inlet passageway, and a second cooling fluid outlet for permitting the flow of the second cooling fluid out of the second heat exchanger and into the second cooling fluid outlet passageway.

10. (Currently Amended) The heat exchanger assembly according to claim 9, wherein

the third cooling fluid is transferred from the drive motor to the third heat radiating area via a third cooling fluid inlet passageway, and from the third heat radiating area to the drive motor via a third cooling fluid outlet passageway, and

the second heat exchanger further comprises a third cooling fluid inlet for receiving the third cooling fluid from the third cooling fluid inlet passageway, and a third cooling fluid outlet for permitting the flow of the third cooling fluid out of the second heat exchanger and into the third cooling fluid outlet passageway.

11. (Currently Amended) The heat exchanger assembly according to claim 10, wherein

relative temperatures of the cooling fluids at the first, second and third cooling fluid inlets are given by the relationship: $\text{Temperature}_{\text{first cooling fluid inlet}} > \text{Temperature}_{\text{second cooling fluid inlet}} > \text{Temperature}_{\text{third cooling fluid inlet}}$, and

relative temperatures of the cooling fluids at the first, second and third cooling fluid outlets are given by the relationship: $\text{Temperature}_{\text{second cooling fluid outlet}} > \text{Temperature}_{\text{third cooling fluid outlet}} > \text{Temperature}_{\text{first cooling fluid outlet}}$.

12. (Currently Amended) The heat exchanger assembly according to claim 1, wherein

the second cooling fluid in the second heat radiating area flows in a straight line from an upper area of the vehicle to a lower area of the vehicle.

13. (Currently Amended) The heat exchanger assembly according to claim 1, wherein

the third cooling fluid in the third heat radiating area flows in a straight line from an upper area of the vehicle to a lower area of the vehicle.

14. (Currently Amended) The heat exchanger assembly according to claim 2, wherein

an area of the first heat radiating area disposed on a first face of the first heat exchanger is substantially the same as combined areas of the second and third heat radiating areas disposed on a first face of the second heat exchanger, the first faces being arranged to receive an airflow, in use.

15. (Currently Amended) The heat exchanger assembly according to claim 2, wherein

the first heat exchanger is disposed substantially parallel to the second heat exchanger.

16. (Currently Amended) The heat exchanger assembly according to claim 2, wherein

the second and third heat radiating areas are disposed adjacent one another.

17. (Withdrawn-Currently Amended) The heat exchanger assembly according to claim 2, wherein

the second heat radiating area is disposed between a first third heat radiating area portion and a second third heat radiating area portion.

18. (Cancelled)

19. (Currently Amended) The heat exchanger assembly according to claim 2, wherein

the first cooling fluid flows from the air conditioning unit to the first heat radiating area via a first cooling fluid inlet passageway, and from the first heat radiating area to the air conditioning unit via a first cooling fluid outlet passageway, and

the first heat exchanger further comprises a first cooling fluid inlet for receiving the first cooling fluid from the first cooling fluid inlet passageway, and a first cooling fluid outlet for permitting the flow of the first cooling fluid out of the first heat exchanger and into the first cooling fluid outlet passageway.

20. (Currently Amended) The heat exchanger assembly according to claim 19, wherein

the second cooling fluid flows from the fuel cell to the second heat radiating area via a second cooling fluid inlet passageway, and from the second heat radiating area to the fuel cell via a second cooling fluid outlet passageway, and

the second heat exchanger further comprises a second cooling fluid inlet for receiving the second cooling fluid from the second cooling fluid inlet passageway, and a second cooling fluid outlet for permitting the flow of the second cooling fluid out of the second heat exchanger and into the second cooling fluid outlet passageway.

21. (Currently Amended) The heat exchanger assembly according to claim 20, wherein

the third cooling fluid is transferred from the drive motor to the third heat radiating area via a third cooling fluid inlet passageway, and from the third heat radiating area to the drive motor via a third cooling fluid outlet passageway, and

the second heat exchanger further comprises a third cooling fluid inlet for receiving the third cooling fluid from the third cooling fluid inlet passageway, and a third cooling fluid outlet for permitting the flow of the third cooling fluid out of the second heat exchanger and into the third cooling fluid outlet passageway.

22. (Currently Amended) The heat exchanger assembly according to claim 21, wherein

relative temperatures of the cooling fluids at the first, second and third cooling fluid inlets are given by the relationship: Temperature_{first cooling fluid inlet} > Temperature_{second cooling fluid inlet} > Temperature_{third cooling fluid inlet}, and

relative temperatures of the cooling fluids at the first, second and third cooling fluid outlets are given by the relationship: Temperature_{second cooling fluid outlet} > Temperature_{third cooling fluid outlet} > Temperature_{first cooling fluid outlet}.

23. (Currently Amended) The heat exchanger assembly according to claim 2, wherein

the second cooling fluid in the second heat radiating area flows in a straight line from an upper area of the vehicle to a lower area of the vehicle.

24. (Currently Amended) The heat exchanger assembly according to claim 2, wherein

the third cooling fluid in the third heat radiating area flows in a straight line from an upper area of the vehicle to a lower area of the vehicle.